

REMARKS

Applicant wishes to thank Examiner Smith and Primary Examiner Marschel for their time, helpful suggestions and recommendations during the personal interview on June 10, 2004, in which the outstanding rejections were discussed in relation to the pending claims. Applicant also wishes to thank Examiner Smith and Primary Examiner Marschel for helping to clarify the issues in the Office Action. As a result, Applicant submits this response.

Interview Summary

Primary Examiner Ardin Marschel, Examiner Carolyn L. Smith, and Applicant's representatives, Andrew T. Karnakis, Esq. and Michael J. Bastian, Esq., participated in the personal interview of June 10, 2004. Ex. Smith and Primary Ex. Marschel and Applicant's representatives discussed then pending claims 1-29, in view of the outstanding rejections under 35 U.S.C. §§ 101, 102 and 103, as well as possible amendments and U.S. Patent No. 6,017,693 to Yates, III et al., ("Yates"); agreement was not reached.

Status of the claims

Claims 1-29 are pending in the application. Claims 30-33 have been previously withdrawn from consideration and claims 1-29 have been examined. Applicant hereby amends claims 1, 8, 17, 18, 19, 23 and 26, and cancels without prejudice claims 8 and 25. After entry of this paper claims 1-7, 9-24, and 26-29 remain pending for examination.

Amendments to the Claims

Applicant has amended claim 1. Support for the amendments to claim 1 is found at least at page 3, lines 15-16 and 24-26; page 19, line 21 to page 21, line 4; and page 33, line 28 to page 34, line 1; and original claim 8. Accordingly, the amendment to claim 1 adds no new matter.

Applicant has amended claims 17, 18, and 19 to further clarify their dependency from claim 1. Support for the amendments to claim 17 is found at least at page 29, lines 12-15; page 31, lines 1-6; and page 31, line 23, to page 32, line 14. Support for the amendments to claim 18 is found at least at page 29, lines 12-15; page 31, lines 1-22. Support for the amendments to claim 19 is found at least at page 29, lines 12-15; page 31, lines 1-6; and page 33, lines 1-27. Accordingly, the amendments to claims 11, 17, 18 and 19 add no new matter.

Original claims 9 and 26 depended from now canceled claims 8 and 25. Accordingly, claims 9 and 26 have been amended to clarify their dependency from amended claims 1 and 23, respectively; and these amendments add no new matter.

Applicant has amended claim 23. Support for the amendments to claim 1 is found at least at page 3, lines 15-16 and 24-26; page 19, line 21 to page 21, line 4; and page 33, line 28 to page 34, line 1; and original claim 25. Accordingly, the amendment to claim 23 adds no new matter.

Rejections Under 35 U.S.C. §112, second paragraph

Claims 17-20 were rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically, the Office Action alleges that the phrase “wherein the step of determining” lacks clear antecedent basis. Applicant has amended claims 17-19 to further clarify the antecedent basis of these claims. Applicant thus respectfully requests reconsideration and withdraw of the rejections of amended claims 17-20 under 35 U.S.C. §112, second paragraph.

Rejections Under 35 U.S.C. §101

Claims 1-29 were rejected under 35 U.S.C. §101 as allegedly directed to non-statutory subject matter as encompassing computer related methods that appear to lack any physical result performed outside a computer. Applicant must respectfully disagree with this reading of the claims.

Applicants claims are directed towards statutory subject matter for at least two reasons; (1) the “at least one mass signal” represents data corresponding to a physical object (here a molecule, biomolecule, or fragment thereof) external to any computer that may be used (see, e.g., MPEP 2106 (IV)(B)(2)(b)(i)); and (2) the claimed methods are limited to a practical application in the technological arts, for example, determination of the likelihood of the presence or absence of a biomolecule in a sample, the determination of whether a MS-MS analysis should be performed, etc. (see, e.g., MPEP 2106 (IV)(B)(2)(b)(ii)).

Nevertheless, without acquiescing in the rejection, Applicant has amended claims 1 and 23 to recite, inter alia, “...measuring a mass spectrum of one or more biomolecules from a sample to provide at least one mass signal...” to further clarify the statutory nature of the

claimed inventions. Accordingly, Applicant respectfully requests reconsideration and withdraw of the rejections of claims 1-7, 9-24, and 26-29 under 35 U.S.C. §101.

Rejections Under 35 U.S.C. §102(a)

Claims 1, 4, 7, 21-24, and 28-29 were rejected under 35 U.S.C. §102(a) as allegedly anticipated by U.S. Patent No. 6,017,693 to Yates, III et al., (“Yates”). Specifically, the Office Action at page 7, reads:

Yates, III et al. disclose a mass tolerance of the unknown peptide from which spectra from known sequences are identified if they fall within the tolerance amount (col. 4, lines 59-67 and Figure 4) which is reasonably interpreted as the biomolecule fragment detection parameter. Yates III et al. disclose an example using a tolerance of + 0.05% of the mass of the unknown peptide used (col. 5, lines 25-26) which is reasonably interpreted as a detection efficiency as stated in claims 7 and 24.

Applicant respectfully submits that Yates does not teach or suggest every element of Applicant’s independent amended claims 1 and 23 or either of these claims as a whole. Specifically, Yates does not teach or suggest a method for determining the likelihood of the presence of a biomolecule using a “biomolecule fragment detection parameter” as set forth in either amended claim 1 or 23. Applicant respectfully maintains and reiterates the arguments set forth in Applicant’s prior Amendment and Response of October 20, 2003, (as if set forth herein in their entirety) that the specification makes clear to one of ordinary skill in the art that the “biomolecule fragment detection parameter” can not be reasonably interpreted to be a “mass tolerance” as disclosed in Yates.

Nevertheless, without acquiescing in the prior rejections, Applicant has amended claims 1 and 23 to recite, inter alia, that:

“determining a biomolecule fragment score for said mass signal, wherein said biomolecule fragment score comprises a function of:

the mass signal intensity for said mass signal,

a biomolecule fragment detection parameter for a biomolecule fragment of said potential source biomolecule, and

a mass error for said mass signal from the relative difference between a mass which corresponds to said mass signal and a mass of the biomolecule fragment;”

to further clarify that the “biological fragment score” of Applicant’s claimed invention includes factors in addition to mass error, and to further clarify that the term “biomolecule fragment detection parameter” in the claimed inventions can not reasonably be interpreted by one of ordinary skill in the art to refer to “mass tolerance” as set forth in Yates. Applicant submits that the above recited amendment to claims 1 and 23 is supported by at least original claim 8 (with respect to claim 1) and original claim 25 (with respect to claim 23) and Applicant further notes that neither claim 8 nor claim 25 stand rejected under either 35 U.S.C. §102(a). Accordingly, Applicant respectfully requests reconsideration and withdraw of the rejections of claims 1-7, 9-24, and 26-29 under 35 U.S.C. §102(a).

Rejections Under 35 U.S.C. §103

Claims 1-7, 11-17, 21-24, and 28-29 were rejected under 35 U.S.C. §103 as allegedly obvious over Yates in view of U.S. Patent No. 5,710,713 to Wright et al. (“Wright”), and the article “*Improving protein identification from peptide mass fingerprinting through a parameterized multi-level scoring algorithm and optimized peak detection*” in Electrophoresis 1999, Volume 20, pages 3535-3550 by Gras et al. (“Gras”).

Applicant respectfully submits that Yates, Wright, and Gras, either alone or in proper combination, fail to teach or suggest all elements of Applicant’s claims or these claims as a whole. As discussed above, Yates fails to teach or suggest “determining a biomolecule fragment score” using “the mass signal intensity for said mass signal, a biomolecule fragment detection parameter...and a mass error for said mass signal” as set forth in either amended independent claim 1 or 23, and Wright and Gras, either alone or in proper combination, do not provide the teaching missing in Yates.

Specifically, neither Wright nor Gras teach “determining a biomolecule fragment score” using “the mass signal intensity for said mass signal, a biomolecule fragment detection parameter...and a mass error for said mass signal” as set forth in either amended independent claim 1 or 23. Applicant thus respectfully submits that claims 1 and 23, and claims 2-7, 9-22, 24, and 26-29 that depend therefrom, are novel and non-obvious Yates, Wright, and Gras, either alone or in proper combination.

In conclusion, with respect to the rejections under 35 U.S.C. § 102(a) and § 103, Applicant submits that the amendment to claims 1 and 23, which recites, inter alia, that:

“determining a biomolecule fragment score for said mass signal, wherein said biomolecule fragment score comprises a function of:

the mass signal intensity for said mass signal,

a biomolecule fragment detection parameter for a biomolecule fragment of said potential source biomolecule, and

a mass error for said mass signal from the relative difference between a mass which corresponds to said mass signal and a mass of the biomolecule fragment;”

is supported by at least original claims 8 (with respect to claim 1) and original claim 25 (with respect to claim 23). Applicant notes that neither claim 8 nor claim 25 stand rejected under either 35 U.S.C. §102(a) or §103. Accordingly, Applicant respectfully requests reconsideration and withdraw of the rejections of claims 1-7, 9-24, and 26-29 under 35 U.S.C. §102(a) and §103.

CONCLUSION

In view of the above, it is believed that all presently pending claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone call would expedite the prosecution of this case, the Examiner is invited to call the undersigned at (617) 994-0829.

Applicant believes no additional fee is due with this resubmittal. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. SY9-155 from which the undersigned is authorized to draw.

Dated: October 6, 2004

Respectfully submitted,

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